

scattered along the north shore, and making occasionally the entire circuit of Cape Cod, are soon deposited in Provincetown harbor. Here also, as at Nantucket, the movement is opposite to the prevailing winds. The transportation of such heavy materials as coal and bricks has been mentioned."

Mr. Small, the keeper of the light at Truro, said that "When articles float light upon the water, and offer a large body to the resistance of the wind, they may during the violence of the storm be carried against the current. During seven-eighths of the time, the waves break on the shore at Truro in a direction to the northward of west, the shore itself running north and south. This takes place in *opposition* to northerly winds. If these winds are exceedingly strong, they may for a short time overcome this prevailing tendency. It is the same on the eastern shore of Sandy Hook and of Nantucket. As the flood tide runs in a northerly direction at each of these places, the idea is suggested that there is an intimate connection between the course of the current and the manner of approach of the waves to the beach." \* \* \* "The constructive process of the flood is equally exhibited in the way in which the hooks, etc., are built up. They extend and increase always in the direction of the advancing current, as, for example, the Great Point of Nantucket gains constantly to the north, and the point of Monomoy to the south, which are the directions of the flood currents at these places. \* \* \* And so with all the hooks, both great and small, of the north-eastern coast, whether formed on the borders of the sea or in enclosed bays and harbors."

Hitherto the *tides* have been regarded chiefly as an astronomical problem; but if the views brought forward in this memoir are correct, they must hereafter be treated also as a strict geological problem. It has been shown that the courses of the tidal currents must in general be due to the forms of the shores" (page 148). "In this memoir, the forms, localities and amounts of the alluvial deposits have been attributed to the active influence of local currents."

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*Notes on the Botocúdis and their Ornaments.*

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(Read before the American Philosophical Society, November 16, 1888.)

The Botocúdis of Brazil have been described at more or less length by Prince Maximilien,\* Auguste de St. Hilaire,† Lery,‡ Denis,§ Bigg-

\* Voyage au Brésil, par S. A. S. Maximilien (French translation from the original German), Vol. ii, p. 207 et seq.

† Voyage dans les provinces de Rio de Janeiro et de Minas Geraes, par Auguste de St. Hilaire, 2 vols.

‡ Histoire d'un voyage fait en la terre du Brésil, par Jean de Lery, p. 103-1.

§ Brésil, par Ferdinand Denis. This work reproduces five plates of these Indians.

Wither,\* Professor Hartt† and others, but nowhere have such carefully-made drawings been published of them as the accompanying, for none of the illustrations give any idea of the true features of these people. The photographs from which these are made were taken by M. Marc Ferrez, of Rio de Janeiro, in 1876, when he was employed as the photographer on the Brazilian Geological Survey. A leveling rod (metric system) was placed beside the subject in some cases for the purpose of affording an approximate measure. The short horizontal bands running part of the way across the rod are one centimetre wide.

These Indians live near the Rio Doce, about three hundred miles north-east of Rio de Janeiro. They are, or were but a short time ago, savages, and were formerly regarded as the most ferocious and intractable of all Brazil.‡ They wear but little clothing; their hair is very black and coarse, and their color a light mulatto. The women do not allow their hair to grow upon any part of the body except the head, and in the illustrations it may be noticed that they have no eyebrows, the hairs all having been pulled out. The children are dirt-eaters.

One of the most striking habits of these people is shown in the pictures—the wearing in the lips and ears as ornaments of great plugs resembling big, broad bottle-stoppers. As far as these pictures show the custom, the ear-plugs seem to be worn by both men and women, but only the women appear to wear them in the lips. The accounts given by Maximilien show that this custom was not so restricted at the time of his visit in 1836.

The openings for these ornaments (for that of course is what they are meant to be) are made by first piercing the ear or lip of the child when seven or eight years old with a small thorn or wooden spit of some kind, just as the ears are pierced nowadays among some civilized people, and a small stick is inserted in the opening. In a short time a larger stick is inserted, and as the opening yields to pressure, still larger sticks or plugs are used until the desired size is attained.

The lip ornament is made of a light kind of wood, is usually about two inches across (Prince Maximilien measured one over four inches in diameter), three-quarters of an inch thick, and with a groove about it in which the flesh-band fits, holding it in place. The lips of the younger people stand out at right angles or are somewhat elevated at the exterior margin, but with age the muscles relax, the openings enlarge, and the lips dangle. When the wearer smiles broadly the projecting ornament rises, and if it fits tightly, strikes the end of the nose. This ornament is worn almost all the time, though it is occasionally taken out. When these lip-plugs are removed the loops of flesh hang down in the most ungraceful manner imaginable, and are often torn out in the family jars that occur even in savage life. So great is the attachment of the women to their lip-orna-

\*Pioneering in South Brazil, by Thomas Bigg-Wither, Vol. II.

†Geology and Physical Geography of Brazil, by Ch. Fred. Hartt. Appendix, p. 577 et seq.

‡Southey's History of Brazil.

ments, that when one of them gets the flesh-band broken, she patches the ends together with strings that she may not be without her ornaments. This breaking and mending are shown in illustrations 4, 5 and 7, while in 3 and 6 the bands are shown unbroken. Lery says they used to take the plugs from these openings and thrust their tongues through them in order to give the impression that they had two mouths. He adds: "I leave you to judge whether they are handsome in this act." One cannot help thinking that St. Hilaire was in a waggish mood when he wrote of these people that "*ils se distinguent surtout par une physionomie plus ouverte.*" than the other Indians of Minas.\* The use of these heavy lip-ornaments appears to have affected the language of these people, for it is remarkably guttural and nasal, and has no labial sounds.

When the ear-rings or ear-plugs are lost or removed, the bands of flesh dangle near the shoulders, as may be seen in 2 and 8, and are, on account of the danger of being broken or torn when thus left exposed, generally looped over the tops of the ears. This is shown in 3, 6 and 7. In 4 the ear-opening is not fashionably large. The lip and ear-ornaments of South American Indians are not always made of plain wood and in this bungling, bottle-stopper shape, the custom varying more or less among the widely scattered tribes. Some of them use pendants smaller in diameter, but of greater length, while some of them are made with the greatest care, and of the most beautiful stones. In the Museu Nacional at Rio de Janeiro are many of these more beautiful lip and ear ornaments made of beryl, jade, serpentine, quartz, clay and wood.† Bigg-Wither figures one large spindle-shaped lip-ornament from Southern Brazil weighing a quarter of a pound.‡

The use of these monstrous plugs is gradually dying out among the Botocúds. It is to be noticed, even in these illustrations, that the younger members of the tribe do not wear them, and in the case of number 10 the young woman wears ear-pendants very like those used among the more civilized races of the present day.

No. 9 is introduced to show the method used by the people to carry children. The same method is employed in carrying other burdens. It shows also the method of wearing the dress, which is usually nothing more than a strip of cloth, but which is sometimes sewed together at the ends.

Under the encroaching influences of civilization, the savage customs of these tribes are gradually disappearing.

\* Southey's History of Brazil, Vol. II, p. 151.

† Archivos do Museu Nacional, Vol. VI, 1885, Placé VIII.

‡ Op. cit., p. 142.